

# CLAIMS

What is claimed is:

1. A method for managing a mortgage-backed securities index, comprising the steps of:
  - a. selecting a set of mortgage-backed securities to be included in said mortgage-backed securities index, said set of mortgaged-backed securities being selected from all outstanding mortgage-backed securities;
  - b. assigning a relative weight to each security within said selected set, said relative weight being a relative proportion of total outstanding principal on said each security to the total outstanding principal on all securities within said selected set;
  - c. calculating a total return of said mortgage-backed securities index, said total return being based on said assigned relative weight for said each security, and a total return of said each security based on a same-day-settle price.
2. A method for managing a mortgage-backed securities index according to Claim 1, wherein said step of selecting a set of mortgage-backed securities further comprises steps of:
  - a. aggregating said all outstanding mortgage-backed securities into a plurality of pools, each of said pools comprising mortgage-backed securities having the same coupon and the same original term; and
  - b. calculating an inclusion criteria for each pool within said plurality of pools.

3. A method for managing a mortgage-backed securities index according to Claim 2

wherein said inclusion criteria is given by the following equation:

$$x_{c,t} = \frac{\left[ \sum_{a = \left\{ \begin{array}{c} FNMA \\ GNMA \\ FHLMC \end{array} \right\}} \rho_{a,c,t} \right]}{\left[ \sum_{\substack{a = FNMA, GNMA, \\ c \in Z \\ t = 180, 360}} \rho_{a,c,t} \right]},$$

wherein  $\rho_{a,c,t}$  is the total outstanding principal on said outstanding mortgage-backed securities,

$a$  is an agency which issued said outstanding mortgage-backed securities,

$c$  is a coupon value of said outstanding mortgage-backed securities, and

$t$  is an original term of said outstanding mortgage-backed securities.

4. A method for managing a mortgage-backed securities index according to Claim 3, further comprising steps of comparing said inclusion criteria for a particular pool to a threshold value, and including said particular pool in said selected set if said threshold is met.

5. A method for managing a mortgage-backed securities index according to Claim 4, wherein said threshold value is 1.5% for all 30-year mortgage-backed securities pools.

6. A method for managing a mortgage-backed securities index according to Claim 4, wherein said threshold value is 0.4% for all 15-year mortgage-backed securities pools.

7. A method for managing a mortgage-backed securities index according to Claim 3

wherein said relative weight of said each security within said selected set is given by the

following equation: 
$$w = \frac{[x_{c,t} \rho_{a,c,t}]}{\sum_{\substack{a = \text{FNMA,} \\ \text{GNMA,} \\ c \in \mathbb{Z} \\ t = 180, 360}} \rho_{a,c,t} \text{ FHLMC}} .$$

8. A method for managing a mortgage-backed securities index according to Claim 7,

wherein said total return of said each security within said selected set on any given day  $t_2$

is given by the following equation:

$$TR_{t_2}^j = \frac{-p_{t_1} + f_{t_1} p_{t_2} + \left[ (1 - f_{t_1}) + \frac{c}{12} \right] \left[ 1 + r_{t_1} \frac{|d|}{360} \right]^{-k}}{p_{t_1}} , \quad \text{wherein } p_{t_1} \text{ is a}$$

same-day settle price of said each security on the close of day  $t_1$ , wherein  $p_{t_2}$  is a same-

day settle price of said each security on the close of day  $t_2$ , wherein  $r_{t_1}$  is a one-month

BBA LIBOR on the close of day  $t_1$ , wherein  $f_{t_1}$  is a monthly pay-down factor of said

each security as best determined by day  $t_1$ , said monthly pay-down factor  $f_{t_1}$  being

selected from a sequence of monthly pay-down factors  $f_i$ ,  $t_1$  is the last business day of

the preceding month,  $t_2$  is any day of the current month, and wherein

$$d = \begin{cases} 25 - \text{day of the month of } t_2, & \text{if said security is issued by FNMA} \\ 15 - \text{day of the month of } t_2, & \text{if said security is issued by GNMA or} \\ & \text{FHLMC} \end{cases}$$

and

$$k = \begin{cases} +1, & \text{if } d > 0 \\ -1, & \text{if } d < 0 \end{cases}$$

9. A method for managing a mortgage-backed securities index according to Claim 8, wherein said sequence of monthly pay-down factors is given by the following equation:

$$f_i = \frac{\sum_{\alpha \in A} \rho_{\alpha,i} - \sum_{\alpha \in A} \rho_{\alpha,i+1}}{\sum_{\alpha \in A} \rho_{\alpha,i}}, \text{ wherein } \rho_{\alpha,i} \text{ is the principal outstanding of pool } \alpha$$

as of the first of month  $i$ , and wherein  $\rho_{\alpha,i+1}$  is the principal outstanding of pool  $\alpha$  as of the first of month  $i+1$ .

10. A method for managing a mortgage-backed securities index according to Claim 9

wherein said same-day settle price is given by the following equation:

$$p_t = \frac{\tilde{p}_t + \frac{c}{12} \frac{d_1}{30}}{1 + r \frac{d_2}{360}} f_t + \frac{(1 - f_t) + \frac{c}{12}}{1 + r \frac{d_3}{360}},$$

wherein  $\tilde{p}_t$  is the TBA price of said security 1-month forward standard PSA settle on the close of business on day  $t$ ; wherein  $d_1$  is the number of days into the month that 1-month forward standard PSA settle occurs; wherein  $d_2$  is the number of days in between the purchase date and the standard PSA settle date 1-month forward inclusive of the former and exclusive of the latter; wherein, for FNMA mortgage-backed securities,  $d_3$  is the number of days between the purchase date and the 25th of the next month; wherein for GNMA or FHLMC mortgage-backed securities,  $d_3$  is the number of days between the purchase date and the 15th of the next month; and wherein  $r$  is a one-month BBA LIBOR on the close of day  $t$ .

11. A method for managing a mortgage-backed securities index according to Claim 10

wherein said total return of said index from day  $t_1$  in month  $k$  to day  $t_2$  in month  $n$  is given by the following equation:

$$TR|_{t_1}^{t_2} = \left(1 + TR_k - TR_{t_1}\right) \left[ \prod_{i=k+1}^{n-1} (1 + TR_i) \right] (1 + TR_{t_2}) - 1, \quad TR_{t_1} \text{ is the month-to-}$$

date total return of said index on the day  $t_1$ , and  $TR_{t_2}$  is the moth-to-date total return of said index on the day  $t_2$ , wherein  $TR_k$  is the total return of the index for the month  $k$ , and wherein  $TR_i$  is the total return of the index for any intermediate month between  $k$  and  $n$ .

12. A method for managing a mortgage-backed securities index according to Claim 11

wherein said total return of the index for any intermediate month is given by the following equation:

$$TR_i = \frac{\sum_{j=1}^n w_i^j p_{i,i}^j TR_i^j}{\sum_{j=1}^n w_i^j p_i^j}, \quad \text{wherein said total returns of said index on the day } t_1 \text{ and}$$

$$t_2 \text{ are given by the following equation: } TR_t = \frac{\sum_{j=1}^n w_i^j p_i^j TR_t^j}{\sum_{j=1}^n w_i^j p_i^j},$$

wherein  $\{w_i^j\}_{j=1}^n$  are the relative weights of said mortgage-backed securities within said index, and wherein  $p_i^j$  is the same-day settle price for said each security within said index.

13. A method for managing a mortgage-backed securities index according to Claim 12,

further comprising a step of determining a level of said mortgage-backed securities index,

said level being given by the following equation:  $\frac{P_t}{P_{00/00/00}} = 1 + TR_{|00/00/00}^t$ , wherein

$P_{00/00/00}$  is the starting level of said index, wherein  $TR_{|00/00/00}^t$  is the total return of said index from start to the day  $t$ , and wherein  $P_t$  is the current level of the index.

14. A method for managing a mortgage-backed securities index according to Claim 13, wherein said starting level of said index is 100.
15. A method for managing a mortgage-backed securities index according to Claim 1, further comprising a step of rebalancing said index by repeating said steps of selecting a set of mortgage-backed securities to be included in said mortgage-backed securities index, assigning said relative weight to each security within said selected set, and calculating said total return of said mortgage-backed securities index.
16. A system for managing a mortgage-backed securities index, comprising:
  - input means for inputting market data into said system, said market data comprising data for all outstanding mortgage-backed securities;
  - selection means for selecting a set of mortgage-backed securities to be included in said mortgage-backed securities index, said set of mortgaged-backed securities being selected from said all outstanding mortgage-backed securities;
  - weight means for assigning a relative weight to each security within said selected set, said relative weight being a relative proportion of total outstanding principal on said each security to a total outstanding principal on all securities within said selected set; and
  - total return means for calculating a total return of said mortgage-backed securities index, said total return being calculated based on said assigned relative weight of said each security within said selected set, and a total return of said each security within said selected set based on a same-day-settle price.

17. A system for managing a mortgage-backed securities index according to Claim 16 further comprising a storage means, said storage means storing data circulated within said system.
18. A system for managing a mortgage-backed securities index according to Claim 16 further comprising a classification means, said classification means classifying said data for all outstanding mortgage-backed securities in accordance with a coupon value, issuing agency and original term of each of said outstanding mortgage-backed securities.
19. A system for managing a mortgage-backed securities index according to Claim 18 further comprising an aggregation means, said aggregation means aggregating said outstanding mortgage-backed securities into a plurality of aggregated pools.
20. A system for managing a mortgage-backed securities index according to Claim 19 wherein said selection means further comprises means for calculating an inclusion criterion for each of said aggregated pools.



21. A system for managing a mortgage-backed securities index according to Claim 20

wherein said inclusion criterion is given by the following equation:

$$X_{c,t} = \frac{\left[ \sum_{a = \left\{ \begin{array}{c} \text{FNMA} \\ \text{GNMA} \\ \text{FHLMC} \end{array} \right\}} \rho_{a,c,t} \right]}{\left[ \sum_{\substack{a = \text{FNMA, GNMA, FHLMC} \\ c \in Z \\ t = 180, 360}} \rho_{a,c,t} \right]}$$

wherein  $\rho_{a,c,t}$  is the total outstanding principal on said outstanding mortgage-backed securities,

$a$  is an agency which issued said outstanding mortgage-backed securities,

$c$  is a coupon value of said outstanding mortgage-backed securities, and

$t$  is an original term of said outstanding mortgage-backed securities.

22. A system for managing a mortgage-backed securities index according to Claim 21,

further comprising means for comparing said inclusion criterion for all of said aggregated pools to a threshold value, and including an aggregated pool in said selected set if said threshold is met.

23. A system for managing a mortgage-backed securities index according to Claim 22,

wherein said threshold value is 1.5% for all 30-year mortgage-backed securities pools.

24. A system for managing a mortgage-backed securities index according to Claim 22, wherein said threshold value is 0.4% for all 15-year mortgage-backed securities pools.

25. A system for managing a mortgage-backed securities index according to Claim 21 wherein said relative weight of said each security within said selected set is given by the

following equation:  $w = \frac{[X_{c,t} \rho_{a,c,t}]}{\sum_{\substack{a = \text{FNMA, GNMA, FHLMC} \\ c \in Z \\ t = 180, 360}} \rho_{a,c,t}}$ , wherein  $w$  is said relative

weight of said each security within said selected set.

26. A system for managing a mortgage-backed securities index according to Claim 16 wherein said total return means further comprises means for calculating said total return of said each security within said selected set.

27. A system for managing a mortgage-backed securities index according to Claim 26 wherein said means for calculating calculates said total return of said each security within said selected set on any given day  $t_2$  in accordance with the following equation:

$$TR_{t_2}^j = \frac{-p_{t_1} + f_{t_1} p_{t_2} + \left[ (1 - f_{t_1}) + \frac{c}{12} \right] \left[ 1 + r_{t_1} \frac{|d|}{360} \right]^{-k}}{p_{t_1}},$$

wherein  $p_{t_1}$  is a same-day settle price of said each security on the close of day  $t_1$ , wherein

$p_{t_2}$  is a same-day settle price of said each security on the close of day  $t_2$ , wherein  $r_{t_1}$  is a

one-month BBA LIBOR on the close of day  $t_1$ , wherein  $f_{t_1}$  is a monthly pay-down factor of said each security as best determined by day  $t_1$ , said monthly pay-down factor  $f_{t_1}$  being selected from a sequence of monthly pay-down factors  $f_i$ ,  $t_1$  is the last business day of the preceding month,  $t_2$  is any day of the current month, and wherein

$$d = \begin{cases} 25 - \text{day of the month of } t_2, & \text{if said each security is issued by FNMA} \\ 15 - \text{day of the month of } t_2, & \text{if said each security is issued by} \\ & \text{GNMA or FHLMC} \end{cases}$$

and

$$k = \begin{cases} +1, & \text{if } d > 0 \\ -1, & \text{if } d < 0 \end{cases}$$

28. A system for managing a mortgage-backed securities index according to Claim 27, wherein said sequence of monthly pay-down factors is given by the following equation:

$$f_i = \frac{\sum_{\alpha \in A} \rho_{\alpha,i} - \sum_{\alpha \in A} \rho_{\alpha,i+1}}{\sum_{\alpha \in A} \rho_{\alpha,i}}, \text{ wherein } \rho_{\alpha,i} \text{ is the principal outstanding of pool } \alpha$$

as of the first of month  $i$ , and wherein  $\rho_{\alpha,i+1}$  is the principal outstanding of pool  $\alpha$  as of the first of month  $i+1$ .

29. A system for managing a mortgage-backed securities index according to Claim 16,

wherein said same-day settle price is given by the following equation:

$$p_t = \frac{\tilde{p}_t + \frac{c}{12} \frac{d_1}{30}}{1 + r \frac{d_2}{360}} f_t + \frac{(1 - f_t) + \frac{c}{12}}{1 + r \frac{d_3}{360}},$$

wherein  $\tilde{p}_t$  is the TBA price of said security 1-month forward standard PSA settle on the close of business on day  $t$ ; wherein  $d_1$  is the number of days into the month that 1-month forward standard PSA settle occurs; wherein  $d_2$  is the number of days in between the purchase date and the standard PSA settle date 1-month forward inclusive of the former and exclusive of the latter; wherein, for FNMA mortgage-backed securities,  $d_3$  is the number of days between the purchase date and the 25th of the next month; wherein for GNMA or FHLMC mortgage-backed securities,  $d_3$  is the number of days between the purchase date and the 15th of the next month; and wherein  $r$  is a one-month BBA LIBOR on the close of day  $t$ .

30. A system for managing a mortgage-backed securities index according to Claim 16

wherein said total return of said index from day  $t_1$  in month  $k$  to day  $t_2$  in month  $n$  is given by the following equation:

$$TR_{t_1}^{t_2} = \left(1 + TR_k - TR_{t_1}\right) \left[ \prod_{i=k+1}^{n-1} (1 + TR_i) \right] (1 + TR_{t_2}) - 1$$

when  $k < n-1$ , wherein  $TR_{t_1}$  is the month-to-date total return of said index on the day  $t_1$ , and  $TR_{t_2}$  is the month-to-date total return of said index on the day  $t_2$ , wherein  $TR_k$  is the total return of the index for the month  $k$ , and wherein  $TR_i$  is the total return of the index for any intermediate month between  $k$  and  $n$ .

31. A system for managing a mortgage-backed securities index according to Claim 30

wherein said total return of the index for any intermediate month is given by the following equation:

$$TR_i = \frac{\sum_{j=1}^n w_i^j p_{i1}^j TR_i^j}{\sum_{j=1}^n w_i^j p_i^j}, \quad \text{wherein said total returns of said index on the day } t_1 \text{ and}$$

$$t_2 \text{ are given by the following equation: } TR_i = \frac{\sum_{j=1}^n w_i^j p_i^j TR_i^j}{\sum_{j=1}^n w_i^j p_i^j},$$

wherein  $\{w_i^j\}_{j=1}^n$  are the relative weights of said mortgage-backed securities within said index, and wherein  $p_i^j$  is the same-day settle price for said each security within said index.

32. A system for managing a mortgage-backed securities index according to Claim 16

wherein said total return of said index from day  $t_1$  in month  $k$  to day  $t_2$  in month  $n$  is given by the following equation:

$$TR|_{t_1}^{t_2} = TR_{t_2} - TR_{t_1}$$

when  $k=n$ , wherein  $TR_{t_1}$  is the total return of said index on the day  $t_1$ , and  $TR_{t_2}$  is the total return of said index on the day  $t_2$ .

33. A system for managing a mortgage-backed securities index according to Claim 16

wherein said total return of said index from day  $t_1$  in month  $k$  to day  $t_2$  in month  $n$  is given by the following equation:

$$TR|_{t_1}^{t_2} = (1 + TR_k - TR_{t_1})(1 + TR_{t_2}) - 1$$

when  $k=n-1$ , wherein  $TR_{t_1}$  is the total return of said index on the day  $t_1$ , wherein  $TR_{t_2}$  is the total return of said index on the day  $t_2$ , and wherein  $TR_k$  is the total return of the index for the month  $k$ .

34. A system for managing a mortgage-backed securities index according to Claim 16,

further comprising level means, said level means determining a level of said mortgage-backed securities index.

35. A system for managing a mortgage-backed securities index according to Claim 34

wherein said level is given by the following equation:  $\frac{P_t}{P_{00/00/00}} = 1 + TR|_{00/00/00}^t$ ,

wherein  $P_t$  is said level of said mortgage-backed securities index on the day  $t$ ,

wherein  $P_{00/00/00}$  is a starting level of said index, and

wherein  $TR_{100/00/00}^t$  is the total return of said index from the starting date to the day  $t$ .

36. A system for managing a mortgage-backed securities index according to Claim 35, wherein said starting level of said index is 100.
37. A system for managing a mortgage-backed securities index according to Claim 34 further comprising an output means, said output means displaying said level of said mortgage-backed securities index and said total return of said mortgage-backed securities index to the user.
38. A mortgage-backed securities index, comprising:
  - a set of mortgage-backed securities, said set of mortgage-backed securities being selected from all outstanding mortgage-backed securities; wherein a relative weight is assigned to each security within said selected set, said relative weight being a relative proportion of total outstanding principal on said each security to the total outstanding principal on all securities within said selected set, and wherein said mortgage-backed securities index is characterized by a total return of said mortgage-backed securities index, said total return being calculated based on said assigned relative weight for said each security, and a total return of said each security based on a same-day-settle price.
39. A mortgage-backed securities index according to Claim 38, wherein said selected set of mortgage-backed securities is selected by aggregating said all outstanding mortgage-backed securities into a plurality of pools, each of said pools comprising mortgage-

backed securities having the same coupon and the same original term; and calculating an inclusion criteria for each pool within said plurality of pools.

40. A mortgage-backed securities index according to Claim 39, wherein said inclusion

criteria is given by the following equation:

$$X_{c,t} = \frac{\left[ \sum_{a = \left\{ \begin{array}{c} \text{FNMA} \\ \text{GNMA} \\ \text{FHLMC} \end{array} \right\}} \rho_{a,c,t} \right]}{\left[ \sum_{\substack{a = \text{FNMA, GNMA, FHLMC} \\ c \in \mathbb{Z} \\ t = 180, 360}} \rho_{a,c,t} \right]}$$

wherein  $\rho_{a,c,t}$  is the total outstanding principal on said outstanding mortgage-backed securities,

$a$  is an agency which issued said outstanding mortgage-backed securities,

$c$  is a coupon value of said outstanding mortgage-backed securities, and

$t$  is an original term of said outstanding mortgage-backed securities.

41. A mortgage-backed securities index according to Claim 40, wherein if said inclusion criteria for a particular pool is greater than a threshold value, said particular pool is included in said selected set.

42. A mortgage-backed securities index according to Claim 41, wherein said threshold value is 1.5% for all 30-year mortgage-backed securities pools.



43. A mortgage-backed securities index according to Claim 41, wherein said threshold value is 0.4% for all 15-year mortgage-backed securities pools.

44. A mortgage-backed securities index according to Claim 40 wherein said relative weight of said each security within said selected set is given by the following equation:

$$w = \frac{[x_{c,t} \rho_{a,c,t}]}{\left[ \sum_{\substack{a = FNMA, GNMA, \\ c \in Z \\ t = 180, 360}} \rho_{a,c,t} \right]} \quad \text{FHLMC}$$

45. A mortgage-backed securities index according to Claim 44, wherein said total return of said each security within said selected set on any given day  $t_2$  is given by the following

equation: 
$$TR_{t_2}^j = \frac{-p_{t_1} + f_{t_1} p_{t_2} + \left[ \left( 1 - f_{t_1} \right) + \frac{c}{12} \right] \left[ 1 + r_{t_1} \frac{|d|}{360} \right]^{-k}}{p_{t_1}}, \quad \text{wherein } p_{t_1} \text{ is}$$

a same-day settle price of said each security on the close of day  $t_1$ , wherein  $p_{t_2}$  is a same-day settle price of said each security on the close of day  $t_2$ , wherein  $r_{t_1}$  is a one-month BBA LIBOR on the close of day  $t_1$ , wherein  $f_{t_1}$  is a monthly pay-down factor of said each security as best determined by day  $t_1$ , said monthly pay-down factor  $f_{t_1}$  being selected from a sequence of monthly pay-down factors  $f_i$ ,  $t_1$  is the last business day of the preceding month,  $t_2$  is any day of the current month, and wherein

$$d = \begin{cases} 25 - \text{day of the month of } t_2, & \text{if said security is issued by FNMA} \\ 15 - \text{day of the month of } t_2, & \text{if said security is issued by GNMA or} \\ & \text{FHLMC} \end{cases}$$

$$\text{and } k = \begin{cases} +1, & \text{if } d > 0 \\ -1, & \text{if } d < 0 \end{cases}$$

46. A mortgage-backed securities index according to Claim 45, wherein said sequence of monthly pay-down factors is given by the following equation:

$$f_i = \frac{\sum_{\alpha \in A} \rho_{\alpha,i} - \sum_{\alpha \in A} \rho_{\alpha,i+1}}{\sum_{\alpha \in A} \rho_{\alpha,i}}, \text{ wherein } \rho_{\alpha,i} \text{ is the principal outstanding of pool } \alpha$$

as of the first of month  $i$ , and wherein  $\rho_{\alpha,i+1}$  is the principal outstanding of pool  $\alpha$  as of the first of month  $i+1$ .

47. A mortgage-backed securities index according to Claim 46, wherein said same-day settle price is given by the following equation:

$$p_t = \frac{\tilde{p}_t + \frac{c}{12} \frac{d_1}{30}}{1 + r \frac{d_2}{360}} f_t + \frac{(1 - f_t) + \frac{c}{12}}{1 + r \frac{d_3}{360}},$$

wherein  $\tilde{p}_t$  is the TBA price of said security 1-month forward standard PSA settle on the close of business on day  $t$ ; wherein  $d_1$  is the number of days into the month that 1-month

forward standard PSA settle occurs; wherein  $d_2$  is the number of days in between the purchase date and the standard PSA settle date 1-month forward inclusive of the former and exclusive of the latter; wherein, for FNMA mortgage-backed securities,  $d_3$  is the number of days between the purchase date and the 25th of the next month; wherein for GNMA or FHLMC mortgage-backed securities,  $d_3$  is the number of days between the purchase date and the 15th of the next month; and wherein  $r$  is a one-month BBA LIBOR on the close of day  $t$ .

48. A mortgage-backed securities index according to Claim 47, wherein said total return of said index from day  $t_1$  in month  $k$  to day  $t_2$  in month  $n$  is given by the following equation:

$$TR_{t_1}^{t_2} = \left(1 + TR_k - TR_{t_1}\right) \left[ \prod_{i=k+1}^{n-1} (1 + TR_i) \right] (1 + TR_{t_2}) - 1, \text{ wherein } TR_{t_1} \text{ is the}$$

month-to-date total return of said index on the day  $t_1$ , and  $TR_{t_2}$  is the month-to-date total return of said index on the day  $t_2$ , wherein  $TR_k$  is the total return of the index for the month  $k$ , and wherein  $TR_i$  is the total return of the Index for any intermediate month between  $k$  and  $n$ .

49. A mortgage-backed securities index according to Claim 48 wherein said total return of the index for any intermediate month is given by the following equation:

$$TR_i = \frac{\sum_{j=1}^n w_i^j p_{ii}^j TR_i^j}{\sum_{j=1}^n w_i^j p_i^j}, \text{ wherein said total returns of said index on the day } t_1 \text{ and}$$

$$t_2 \text{ are given by the following equation: } TR_t = \frac{\sum_{j=1}^n w_i^j p_i^j TR_t^j}{\sum_{j=1}^n w_i^j p_i^j},$$

wherein  $\{w_i^j\}_{j=1}^n$  are the relative weights of said mortgage-backed securities within said index, and wherein  $p_i^j$  is the same-day settle price for said each security within said index.

50. A mortgage-backed securities index according to Claim 49, wherein said index is further characterized by a level, said level being given by the following equation:

$$\frac{P_t}{P_{00/00/00}} = 1 + TR|_{00/00/00}^t, \text{ wherein } P_{00/00/00} \text{ is the starting level of said index, wherein}$$

$TR|_{00/00/00}^t$  is the total return of said index from start to the day t, and wherein  $P_t$  is the current level of the index.

51. A mortgage-backed securities index according to Claim 50, wherein said starting level of said index is 100.

52. A mortgage-backed securities index according to Claim 38, wherein said index is rebalanced by of selecting a new set of mortgage-backed securities to be included in said mortgage-backed securities index, assigning said relative weight to each security within said new selected set, and calculating a new total return of said mortgage-backed securities index.
53. A mortgage-backed securities index according to Claim 52 wherein said index is rebalanced on a last business day of each month.
54. A computer program for managing a mortgage-backed securities index executable on general purpose computer, comprising:
- an input segment for inputting market data into said system, said market data comprising data for all outstanding mortgage-backed securities;
  - a selection segment for selecting a set of mortgage-backed securities to be included in said mortgage-backed securities index, said set of mortgaged-backed securities being selected from said all outstanding mortgage-backed securities;
  - a weight segment for assigning a relative weight to each security within said selected set, said relative weight being a relative proportion of total outstanding principal on said each security to a total outstanding principal on all securities within said selected set; and
  - a total return segment for calculating a total return of said mortgage-backed securities index, said total return being calculated based on said assigned relative weight

of said each security within said selected set, and a total return of said each security within said selected set based on a same-day-settle price.

55. A computer program for managing a mortgage-backed securities index according to Claim 54 further comprising a storage segment, said storage segment storing data circulated within said system.
56. A computer program for managing a mortgage-backed securities index according to Claim 54 further comprising a classification segment, said classification segment classifying said data for all outstanding mortgage-backed securities in accordance with a coupon value, issuing agency and original term of each of said outstanding mortgage-backed securities.
57. A computer program for managing a mortgage-backed securities index according to Claim 56 further comprising an aggregation segment, said aggregation segment aggregating said outstanding mortgage-backed securities into a plurality of aggregated pools.
58. A computer program for managing a mortgage-backed securities index according to Claim 57 wherein said selection segment further comprises a segment for calculating an inclusion criterion for each of said aggregated pools.

59. A computer program for managing a mortgage-backed securities index according to

Claim 58 wherein said inclusion criterion is given by the following equation:

$$X_{c,t} = \frac{\left[ \sum_{a = \begin{Bmatrix} \text{FNMA} \\ \text{GNMA} \\ \text{FHLMC} \end{Bmatrix}} \rho_{a,c,t} \right]}{\left[ \sum_{\substack{a = \text{FNMA, GNMA, FHLMC} \\ c \in Z \\ t = 180, 360}} \rho_{a,c,t} \right]}$$

wherein  $\rho_{a,c,t}$  is the total outstanding principal on said outstanding mortgage-backed securities,

$a$  is an agency which issued said outstanding mortgage-backed securities,

$c$  is a coupon value of said outstanding mortgage-backed securities, and

$t$  is an original term of said outstanding mortgage-backed securities.

60. A computer program for managing a mortgage-backed securities index according to

Claim 59, further comprising a segment for comparing said inclusion criterion for all of said aggregated pools to a threshold value, and including an aggregated pool in said selected set if said threshold is met.

61. A computer program for managing a mortgage-backed securities index according to

Claim 60, wherein said threshold value is 1.5% for all 30-year mortgage-backed securities pools.

62. A computer program for managing a mortgage-backed securities index according to Claim 60, wherein said threshold value is 0.4% for all 15-year mortgage-backed securities pools.

63. A computer program for managing a mortgage-backed securities index according to Claim 59 wherein said relative weight of said each security within said selected set is

given by the following equation:  $w = \frac{[x_{c,t} \rho_{a,c,t}]}{\sum_{\substack{a = \text{FNMA, GNMA, FHLMC} \\ c \in \mathbb{Z} \\ t = 180, 360}} \rho_{a,c,t}}$ , wherein  $w$  is said

relative weight of said each security within said selected set.

64. A computer program for managing a mortgage-backed securities index according to Claim 54 wherein said total return segment further comprises segment for calculating said total return of said each security within said selected set.

65. A computer program for managing a mortgage-backed securities index according to Claim 64 wherein said segment for calculating calculates said total return of said each security within said selected set on any given day  $t_2$  in accordance with the following

equation: 
$$TR_{t_2}^j = \frac{-p_{t_1} + f_{t_1} p_{t_2} + \left[ \left( 1 - f_{t_1} \right) + \frac{c}{12} \right] \left[ 1 + r_{t_1} \frac{|d|}{360} \right]^{-k}}{p_{t_1}},$$



wherein  $p_{t_1}$  is a same-day settle price of said each security on the close of day  $t_1$ , wherein  $p_{t_2}$  is a same-day settle price of said each security on the close of day  $t_2$ , wherein  $r_{t_1}$  is a one-month BBA LIBOR on the close of day  $t_1$ , wherein  $f_{t_1}$  is a monthly pay-down factor of said each security as best determined by day  $t_1$ , said monthly pay-down factor  $f_{t_1}$  being selected from a sequence of monthly pay-down factors  $f_i$ ,  $t_1$  is the last business day of the preceding month,  $t_2$  is any day of the current month, and wherein

$$d = \begin{cases} 25 - \text{day of the month of } t_2, & \text{if said each security is issued by FNMA} \\ 15 - \text{day of the month of } t_2, & \text{if said each security is issued by GNMA or FHLMC} \end{cases}$$

and

$$k = \begin{cases} +1, & \text{if } d > 0 \\ -1, & \text{if } d < 0 \end{cases}$$

66. A computer program for managing a mortgage-backed securities index according to

Claim 65, wherein said sequence of monthly pay-down factors is given by the following

equation: 
$$f_i = \frac{\sum_{\alpha \in A} \rho_{\alpha,i} - \sum_{\alpha \in A} \rho_{\alpha,i+1}}{\sum_{\alpha \in A} \rho_{\alpha,i}},$$
 wherein  $\rho_{\alpha,i}$  is the principal outstanding

of pool  $\alpha$  as of the first of month  $i$ , and wherein  $\rho_{\alpha,i+1}$  is the principal outstanding of pool

$\alpha$  as of the first of month  $i+1$ .

67. A computer program for managing a mortgage-backed securities index according to

Claim 54, wherein said same-day settle price is given by the following equation:

$$p_t = \frac{\tilde{p}_t + \frac{c}{12} \frac{d_1}{30}}{1 + r \frac{d_2}{360}} f_t + \frac{(1 - f_t) + \frac{c}{12}}{1 + r \frac{d_3}{360}},$$

wherein  $\tilde{p}_t$  is the TBA price of said security 1-month forward standard PSA settle on the close of business on day  $t$ ; wherein  $d_1$  is the number of days into the month that 1-month forward standard PSA settle occurs; wherein  $d_2$  is the number of days in between the purchase date and the standard PSA settle date 1-month forward inclusive of the former and exclusive of the latter; wherein, for FNMA mortgage-backed securities,  $d_3$  is the number of days between the purchase date and the 25th of the next month; wherein for GNMA or FHLMC mortgage-backed securities,  $d_3$  is the number of days between the purchase date and the 15th of the next month; and wherein  $r$  is a one-month BBA LIBOR on the close of day  $t$ .

68. A computer program for managing a mortgage-backed securities index according to

Claim 54 wherein said total return of said index from day  $t_1$  in month  $k$  to day  $t_2$  in month  $n$  is given by the following equation:

$$TR_{t_1}^{t_2} = \left(1 + TR_k - TR_{t_1}\right) \left[ \prod_{i=k+1}^{n-1} (1 + TR_i) \right] (1 + TR_{t_2}) - 1$$

when  $k < n-1$ , wherein  $TR_{t_1}$  is the month-to-date total return of said index on the day  $t_1$ , and  $TR_{t_2}$  is the month-to-date total return of said index on the day  $t_2$ , wherein  $TR_k$  is the total return of the Index for the month  $k$ , and wherein  $TR_i$  is the total return of the index for any intermediate month between  $k$  and  $n$ .

69. A computer program for managing a mortgage-backed securities index according to Claim 68, wherein said total return of the index for any intermediate month is given by the following equation:

$$TR_i = \frac{\sum_{j=1}^n w_i^j p_{ii}^j TR_i^j}{\sum_{j=1}^n w_i^j p_i^j}, \text{ wherein said total returns of said index on the day } t_1 \text{ and}$$

$$t_2 \text{ are given by the following equation: } TR_t = \frac{\sum_{j=1}^n w_i^j p_i^j TR_t^j}{\sum_{j=1}^n w_i^j p_i^j},$$

wherein  $\{w_i^j\}_{j=1}^n$  are the relative weights of said mortgage-backed securities within said index, and wherein  $p_i^j$  is the same-day settle price for said each security within said index.

70. A computer program for managing a mortgage-backed securities index according to Claim 54 wherein said total return of said index from day  $t_1$  in month  $k$  to day  $t_2$  in month  $n$  is given by the following equation:

$$TR|_{t_1}^{t_2} = TR_{t_2} - TR_{t_1}$$

when  $k=n$ , wherein  $TR_{t_1}$  is the total return of said index on the day  $t_1$ , and  $TR_{t_2}$  is the total return of said index on the day  $t_2$ .

71. A computer program for managing a mortgage-backed securities index according to

Claim 54 wherein said total return of said index from day  $t_1$  in month  $k$  to day  $t_2$  in month  $n$  is given by the following equation:

$$TR|_{t_1}^{t_2} = (1 + TR_k - TR_{t_1})(1 + TR_{t_2}) - 1$$

when  $k=n-1$ , wherein  $TR_{t_1}$  is the total return of said index on the day  $t_1$ , wherein  $TR_{t_2}$  is the total return of said index on the day  $t_2$  and wherein  $TR_k$  is the total return of the index for the month  $k$ .

72. A computer program for managing a mortgage-backed securities index according to

Claim 54, further comprising level segment, said level segment determining a level of said mortgage-backed securities index.

73. A computer program for managing a mortgage-backed securities index according to

Claim 72 wherein said level is given by the following equation:

$$\frac{P_t}{P_{00/00/00}} = 1 + TR|_{00/00/00}^t$$

wherein  $P_t$  is said level of said mortgage-backed securities index on the day  $t$ ,

wherein  $P_{00/00/00}$  is a starting level of said index, and

wherein  $TR_{100/00/00}^t$  is the total return of said index from the starting date to the day t.

74. A computer program for managing a mortgage-backed securities index according to

Claim 73, wherein said starting level of said index is 100.

75. A computer program for managing a mortgage-backed securities index according to

Claim 72 further comprising an output segment, said output segment displaying said level of said mortgage-backed securities index and said total return of said mortgage-backed securities index to the user.

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